

Work Order ID 85146

85146

Page 1

June-04-12 1:28:08 PM

Item ID: D350-636-015

Accept

N900040100

Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: Skidtube STD w/ Training Wearplates, LH

Start Date: 04/06/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 18/06/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: MLJ

Date: 12/06/04 Tooling:

Date:

Run Start *NR1*

QC:

Date: SPC (Y/N):

Date:

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr

Revision Nbr

D3492

C

D4168

A

IIN-D350-636

I

0.00

100

DOCUMENT CONTROL

0.00

DC

Memo

Document Control

Photocopy blue file and type labels per PPP D350-636-015 CHG 003

N/A

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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NOTE: Date & initial all entries

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Date: _____

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Date: _____

Stop ***NR2***

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110

0.00

110

Skidtubes

Skidtubes

Memo

0.00

1- Pick D2600-3 Bent

*BE 12/06/28*2- Deburr FWD and AFT ends, remove bending marks. Scribe batch# inside
AFT end per dwg D4168*BE 12/06/28*3- Drill pilot holes for blade fitting bolt holes using DT8983. Open to 0.500",
deburr, section H-H*BE 12/06/28*4- Locate DT8330 off of blade fitting bolt holes and drill pilot holes for blade
fitting, section H-H5- Drill fwd step holes using DT9616. Ensure proper positioning. All holes as
per dwg D4168, detail A*BE 12/06/28*6- Drill pilot holes as per Dwg D4168 sheet 4 (D4168-1 details). Drill using drill
Jig DT8150 & DT8863A for first side only DT8863B for second side (detail B)7- Clecko DT8863B on second side of tube and drill pilot holes for detail B.
SECOND SIDE*BE 12/07/03*

8- Drill most FWD wearplate hole using DT9678 locating off of 66.54" hole.

9-Open up holes of Detail A to 0.297" (total of 2 holes per side) and .201" (total
of 1 hole per side) open holes of detail D section H-H to 0.500" as per dwg
D416810-Weld D2744 Cap as per Dwg D4168 and QSI 004. Fill grooves in bend left
from bending as per QSI 004*BE 12/06/28*

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NR1

QC:

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SPC (Y/N):

Date:

Stop

NR2

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

A/R Aluminum Rod batch: M122130

11-Grind welds flush as per Dwg D4168

12/07/03

120

QC10- Inspect visual per QSI004- ground welds

0.00

120

QC

Memo

0.00

Quality Control

5.2/07/11

130

QC5- Inspect part completeness to step on W/O

0.00

130

QC

Memo

0.00

Quality Control

5.2/07/11

(XU)

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Date:

Tooling:

Date:

Run Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

140

Chemical Conversion Coat per QSI005 4.1

0.00

140

HandFinish

Memo

0.00

Hand Finishing

1 76 12-7-12

150

QC3- Inspect Part Finish

0.00

150

QC

QC7

Memo

0.00

Quality Control

① SAD 12-07-13

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
12-07-13	150	change Q ₃ to Q ₃					

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Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start ***NR1***Stop ***NR2***

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160

160

Skidtubes

Skidtubes

Skidtubes

Memo

0.00

1-Open up holes of Detail C and ground handling section AL-AL to 0.625"
(total of 8 holes per side)
as per dwg D4168.

2-Open up holes of Detail B to 0.750" (total of 4 holes per side)
as per dwg D4168.

3- Open float hole to 0.500" (4 per side) section AJ-AJ

Open wearplate holes to size as per dwg (4 holes per sides) , section CG-CG

4-Chamfer holes of Detail B, C, ground handling section AL-AL and float holes
section AJ-AJ per dwg D4168 (welding instructions on sheet 8)

5-Deburr and blow out all chips from inside of tube

6- Prepare tube for welding, remove alodine as required.

7-Bond web D2739 in place as per QSI 015

A/R Sikaflex-291 batch: 121469

exp. date: 13-4-1212/07/13

8- Weld spacers D3490-1, D3490-3 and D2743 as per dwg D4168 and D4170-1
& QSI004

(welding instructions on sheet 8)

A/R Aluminum Rod batch: M122130

9- At section AJ-AJ drill out x-bolt spacer to 0.404"

3 BE 12/07/13

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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start *NR1*
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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10-Grind welds flush as per Dwg D4168 SAD

11-Spot face ground handling holes section (total of 4 places per side) as per dwg D4168, section AL-AL

12- C'bore section CG-CG

13- Deburr holes

***** FOR DELUXE SKIDTUBE IF APPLICABLE DRILL TOW RING HOLE IN TUBE *****

3 SAD 12-07-20

yes > DP 12-7-25

170

QC10- Inspect visual per QSI004- ground welds

0.00

170

QC

Memo

0.00

Quality Control

DAS
16
9-83

1/4/25

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Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

180

QC5- Inspect part completeness to step on W/O

0.00

DAS
16
9-89 17/6/25

180

QC

Memo

0.00

Quality Control

190

Pressure Wash per QSI005 4.3

0.00

190

HandFinish

Memo

0.00

Hand Finishing

Re-alodine tube as per QSI 005 section 4.1.2.1 do not acid etch.

1 26 12-7-25

200

White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum

0.00

200

Powdercoat

Memo

0.00

Powder Coating

START TIME:
OVEN TEMPERATURE:
FINISH TIME:

7:30
320 °F
8:00

1X4 M-T
12/7/26

W121841

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Run Start ***NR1***

QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop ***NR2***

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

210

QC3- Inspect Part Finish

0.00

210

QC

Memo

0.00

Quality Control

✓ Inspect for foreign object per QSI 024

12/11/12 12/07/30

220

HandFinishing

0.00

220

HandFinish

Memo

0.00

Hand Finishing

✓ 1- Install inserts as per Dwg D4168

12/11/12 12/07/30

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
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Tooling: _____

Date: _____

Run Start ***NR1***

QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

230

0.00

230

HandFinish

HandFinishing

0.00

Memo

✓ 1-Inspect for Foreign Objects

✓ 2-Spray inside of tube with "LPS-3" batch: 11110

3-Install blade fitting D3488-041, wearshoes and ground handling hardware as per dwg D4168

✓ SIKA FLEX 241

BATCH: 111127140EXP DATE: 11103✓ 4-assemble o'ring to plug as per dwg D3492 and apply o'ring lube
A/R 55-o'ring lube batch: 1110348✓ 5-Coat all exposed fasteners with "LPS Procyon" batch: 11145961 htl 11/10/12 12/07/12

240

0.00

240

QC

QC5- Inspect part completeness to step on W/O

Memo

0.00

Quality Control

DAS
16
9-83 11/10/12

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QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***

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Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

250

Pick Kit

0.00

250

Packaging

Memo

0.00

Packaging

If making a D350-636-215
pick kit will only requires:
1 X AN3C37A
1 X AN3C34A
1 X AN3C42A
2 X D3493-1

[Handwritten signature]
12-8-8

260

QC4- 100% Inspect kits for completeness

0.00

260

QC

Memo

0.00

Quality Control

*****ensure antiseize is on AN8C21A bolts*****

DAS 16
12/8/09

270

Packaging

0.00

270

Packaging

Memo

0.00

Packaging

Identify and pack for shipping as per PPPD350-636-015
Location: _____
PPP rev: _____

12/8/10

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SPC (Y/N):

Date:

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
---------	--------	--------------	---------------	---------------	------------------	----------------

280

QC21- Final Inspection - Work Order Release

0.00

280

QC

Memo

0.00

Quality Control

12/8/10

1205-10

W/O:		WORK ORDER CHANGES					
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Picklist Print

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Parent Item: D350-636-015

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Parent Item Name: Skidtube STD w/ Training Wearplates, LH

Start Date: 04/06/2012

Required Date: 18/06/2012

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP rev:A 10.09.28 new issue DD verf:EC IPP Rev:B
11.04.14 ecn11-553 DD verf:EC IPP Rev:C 11.10.18 as per
NCR 11-906 DD verf:EC IPP Rev:D 112.04.16 AS PER ECN 12-
542 DD verf:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
AN3C34A *AN3C34A* BOLT		Purchased		No		230	Each	41.0000	1	1		12/8/8	

Location	Loc Qty	Loc Code
ST353	41	
116075	21	
117514	20	

AN3C36A *AN3C36A* BOLT		Purchased		No		230	Each	162.0000	4	4		12/10/130	
-------------------------------------	--	-----------	--	----	--	-----	------	----------	---	---	--	-----------	--

Location	Loc Qty	Loc Code
FG	4	
101261	4	
ST353	158	
116590	0	
119083	2	
119324	23	
121388	33	
121389	50	
121689	50	

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Start Date: 04/06/2012

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Start Qty: 1.00

Required Qty: 1.00

AN3C37A

Purchased No

230 Each

141.0000 1 1

AN3C37A

BOLT

**

1121584sf



Location

Loc Qty

Loc Code

ST354

141

116874

11

117010

2

120422

3

121068

75

121585

50

AN3C42A

Purchased No

230 Each

32.0000 1 1

AN3C42A

BOLT

**

sf



Location

Loc Qty

Loc Code

ST354

32

106176

1

120464

6

121103

25

D3492-1

Manufactured No

230 Each

257.0000 8 8

D3492-1

Plug

**

sf 12/07/30

Location

Loc Qty

Loc Code

FP002

242

69531

8

74444

2

76235

4

83259

228

FP-A

15

83098

15

Y6

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Work Order ID: 85146

85146

Parent Item: D350-636-015

D350-636-015

Parent Item Name: Skidtube STD w/ Training Wearplates, LH

Start Date: 04/06/2012

Required Date: 18/06/2012

Start Qty: 1.00

Required Qty: 1.00

D3492-3 Manufactured No

230

Each

167.0000

8

8

D3492-3

Plug

**

HL 11/07/30

Location

Loc Qty

Loc Code

FP-A

167

B85161

81967

5

X 0

83099

40

83529

122

D3873-1 Manufactured No

230

Each

462.0000

7

7

D3873-1

Bushing

**

HL 12/07/30

Location

Loc Qty

Loc Code

ST057

6

79561

6

ST067

456

64760

1

68247

4

73829

19

73830

2

76791

410

Y 7

79560

20

D4154-041 Manufactured No

230

Each

0.0000

1

1

D4154-041

Wearplate Assembly

**

B83693 (x1) HL 11/07/30

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

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Work Order ID: 85146

85146

Parent Item: D350-636-015

D350-636-015

Parent Item Name: Skidtube STD w/ Training Wearplates. LH

Start Date: 04/06/2012

Required Date: 18/06/2012

Start Qty: 1.00

Required Qty: 1.00

D4170-1 Manufactured No

230

Each

95 0000

4

4

D4170-1

Bushing

**

BE 12/07/19

Location

Loc Qty

Loc Code

LG

50

82222

50

LG001

45

71844

5

82043

40

4

D4171-1 Manufactured No

230

Each

22.0000

1

1

D4171-1

Bushing

**

12/07/30

Location

Loc Qty

Loc Code

ST104

22

77008

2

82385

20

Y4

MS21043-3 Purchased No

230

Each

1.557.000

4

4

MS21043-3

Nut

**

12/07/30

Location

Loc Qty

Loc Code

FG

72

103691

72

GA

14

120693

14

ST301

1471

118077

2

118614

51

118686

30

119758

20

121255

368

121708

1000

Y4

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Work Order ID: 85146

85146

Parent Item: D350-636-015

D350-636-015

Parent Item Name: Skidtube STD w/ Training Wearplates, LH

Start Date: 04/06/2012

Required Date: 18/06/2012

Start Qty: 1.00

Required Qty: 1.00

NAS1149C0363R

Purchased

No

230

Each

2,958.000

8

NAS1149C0363R

Washer

**

8/7
HL 12/07/13

Location

Loc Qty

Loc Code

ST297

2958

114742

2958

8/7

NAS1515H3L

Purchased

No

230

Each

146.0000

4

*NAS1515H3I *

WASHER

**

HL 12/07/13

Location

Loc Qty

Loc Code

FG

40

102472

40

1122151

HL

ST277

106

118686

3

119438

1

120360

11

121243

2

121556

89

NAS1611-010

Purchased

No

230

Each

188.0000

8

NAS1611-010

O-RING

**

HL 12/07/13

Location

Loc Qty

Loc Code

FP001

188

110915

14

117460

8

118077

1

118612

3

119438

47

121259

2

121415

4

121584

59

121723

50

1122151

HL

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Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Work Order ID: 85146

85146

Parent Item: D350-636-015

D350-636-015

Parent Item Name: Skidtube STD w/ Training Wearplates, LH

Start Date: 04/06/2012

Required Date: 18/06/2012

Start Qty: 1.00

Required Qty: 1.00

NAS1611-013

Purchased

No

230

Each

361.0000

8

8

NAS1611-013

O-RING

**

12/07/30

Location

Loc Qty

Loc Code

FP001

361

116582

5

117291

2

117887

53

119623

36

121584

15

121825

200

121826

50

x 8

NAS1149D0863J

Purchased

No

250

Each

251.0000

2

2

NAS1149D0863.J

WASHER

**

12/07/30

Location

Loc Qty

Loc Code

ST298

251

118078

34

119307

17

120308

100

121556

100

V2

D2744

Manufactured

No

110

Each

35.0000

1

1

D2744

Cap

**

BE 12/06/28

Location

Loc Qty

Loc Code

LG002

35

62715

1

78900

3

83412

31

1

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Work Order ID: 85146

85146

Parent Item: D350-636-015

D350-636-015

Parent Item Name: Skidtube STD w/ Training Wearplates, LH

Start Date: 04/06/2012

Required Date: 18/06/2012

Start Qty: 1.00

Required Qty: 1.00

D2600-3-BENT

Manufactured No

110

Each

29.0000

1

1

D2600-3-BENT

Extrusion Bent

BE 12/06/18
*B86330 *1*

Location

Loc Qty

Loc Code

LG

29

66875

7

73253

1

75021

1

75022

1

75023

1

81330

4

83305

1

83442

13

D2743

Manufactured No

160

Each

296.0000

8

8

D2743

Crossbolt Spacer

BE 12/07/19
*B86459 *8*

Location

Loc Qty

Loc Code

LG

222

81965

55

83262

167

LG001

74

67766

4

68251

3

73403

64

74445

1

79517

2

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Work Order ID: 85146

85146

Parent Item: D350-636-015

D350-636-015

Parent Item Name: Skidtube STD w/ Training Wearplates, LH

Start Date: 04/06/2012

Required Date: 18/06/2012

Start Qty: 1.00

Required Qty: 1.00

D2739 Manufactured No

160 Each

13.0000 1 1

D2739

350 I Beam

**

12/07/13

①

Location B85487

Loc Qty

Loc Code

Location	Loc Qty
LG	13
72155	1
81508	1
83447	4
83448	5
83548	2

D3490-3 Manufactured No

160 Each

46.0000 4 4

D3490-3

Cross Bolt Spacer

**

8E12/07/19

B85420 04

Location

Loc Qty

Loc Code

Location	Loc Qty
LG001	46
83313	46

D3490-1 Manufactured No

160 Each

45.0000 4 4

D3490-1

Cross Bolt Spacer

**

8E12/07/19

B85419 04

Location

Loc Qty

Loc Code

Location	Loc Qty
LG	2
81976	2
LG001	43
62450	2
74875	4
77042	3
83269	34

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

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Work Order ID: 85146

85146

Parent Item: D350-636-015

D350-636-015

Parent Item Name: Skidtube STD w/ Training Wearplates, LH

Start Date: 04/06/2012

Required Date: 18/06/2012

Start Qty: 1.00

Required Qty: 1.00

ALS4-1032-225

Purchased

No

230

Each

781.0000

4

4

AI S4-1032-225 ✓ /

**

HL 12/07/30

Insert

Location

Loc Qty

Loc Code

ST281

758

108696

146

11122290

xd

110768

62

118386

55

118966

68

121269

427

ST282

23

120410

10

120451

13

AN8C35A

Purchased

No

230

Each

68.0000

1

1

AN8C35A

**

HL 12/07/30

BOLT

Location

Loc Qty

Loc Code

FP002

67

115960

1

118286

16

121275

50

ST346

1

114442

0

115188

0

115960

1

D3488-041

Manufactured

No

230

Each

9.0000

1

1

D3488-041

**

HL 12/07/30

Blade Fitting Assembly, LH

Location

Loc Qty

Loc Code

FP002

9

61689

1

82271

8

B45807

x1

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Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Work Order ID: 85146

85146

Parent Item: D350-636-015

D350-636-015

Parent Item Name: Skidtube STD w/ Training Wearplates, LH

Start Date: 04/06/2012

Required Date: 18/06/2012

Start Qty: 1.00

Required Qty: 1.00

AN6C44A

Purchased

No

230

Each

86.0000

4

4

AN6C44A

BOLT

**

sl n/oz/30

Location

Loc Qty

Loc Code

FG

2

103964

2

y712220-1

xl

ST343

84

121013

11

121167

13

121440

50

121689

10

MS21083C8

Purchased

No

230

Each

81.0000

1

1

MS21083C8

NUT

**

sl n/oz/30

Location

Loc Qty

Loc Code

304

75

121185

29

121349

46

yl

FP002

1

115884

1

ST303

4

115884

0

118077

1

119309

2

119638

1

ST304

1

121524

1

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Work Order ID: 85146

85146

Parent Item: D350-636-015

D350-636-015

Parent Item Name: Skidtube STD w/ Training Wearplates, LH

Start Date: 04/06/2012

Required Date: 18/06/2012

Start Qty: 1.00

Required Qty: 1.00

D3631-1 Manufactured No

230 Each 347.0000 8 8

D3631-1

Washer

**

yl 12/07/31

Location

Loc Qty

Loc Code

FG

332

81874

2

83588

330

ST072

15

68062

2

75548

13

xg

AN960C10L NAS1149C0332 Purchased No

230 Each 0.0000 4 4

AN960C10L

washer

11122063 **

(x1) yl 12/07/30

D2745 Manufactured No

230 Each 122.0000 8 8

D2745

Bushing

**

yl 12/07/30

Location

Loc Qty

Loc Code

FP

6

79518

6

FP001

116

69529

1

76142

1

83260

114

B85446

xg

NAS1149C0832R Purchased No

230 Each 257.0000 1 1

NAS1149C0832R

WASHER

**

yl 12/07/30

Location

Loc Qty

Loc Code

ST297

257

114915

257

x1

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Work Order ID: 85146

85146

Parent Item: D350-636-015

D350-636-015

Parent Item Name: Skidtube STD w/ Training Wearplates, LH

Start Date: 04/06/2012

Required Date: 18/06/2012

Start Qty: 1.00

Required Qty: 1.00

AN3C6A

Purchased

No

230

Each

451.0000

4

4

AN3C6A

BOLT

**

JK 11/07/13

Location

Loc Qty

Loc Code

FP001

1

111982

1

ST351

450

111982

2

116419

23

116549

2

116704

12

117619

10

117688

1

117872

5

118422

13

119449

21

120423

3

120693

158

121682

200

JK

MS21043-6

Purchased

No

230

Each

618.0000

4

4

MS21043-6

NUT

**

JK 11/07/13

Location

Loc Qty

Loc Code

FG

20

103693

20

ST301

598

117887

2

118384

96

120308

500

JK

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Work Order ID: 85146

85146

Parent Item: D350-636-015

D350-636-015

Parent Item Name: Skidtube STD w/ Training Wearplates, LH

Start Date: 04/06/2012

Required Date: 18/06/2012

Start Qty: 1.00

Required Qty: 1.00

D3493-1 Manufactured No

250 Each

127.0000 2 2

D3493-1

Washer

**

SD 12-8-88 SP

Location

Loc Qty

Loc Code

ST050

127

77573

1

82023

26

83097

100

MS21083C8

Purchased No

250 Each

81.0000 2 2

MS21083C8

NUT

**

HL 12/02/31

Location

Loc Qty

Loc Code

304

75

121185

29

121349

46

FP002

1

115884

1

ST303

4

115884

0

118077

1

119309

2

119638

1

ST304

1

121524

1

AN8C21A

Purchased No

250 Each

57.0000 2 2

AN8C21A

BOLT

**

HL 12/02/31

Location

Loc Qty

Loc Code

ST343

57

118758

3

121167

4

121275

50

June-04-12 1:28:13 PM

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Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Work Order ID: 85146

85146

Parent Item: D350-636-015

D350-636-015

Parent Item Name: Skidtube STD w/ Training Wearplates, LH

Start Date: 04/06/2012

Required Date: 18/06/2012

Start Qty: 1.00

Required Qty: 1.00

D2741

Manufactured No

250

Each

20 0000

1

1

D2741

Blade, 350 Skidtube

11/6/13

Location

Loc Qty

Loc Code

ST

-10

ST466

30

71856

1

79516

19

1383135

XL

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

QTY -041	QTY -042	QTY -043	QTY -044	PART NUMBER	DESCRIPTION
X				D4168-041	350 SKIDTUBE ASSEMBLY, LH
	X			D4168-042	350 SKIDTUBE ASSEMBLY, RH
		X		D4168-043	350 SKIDTUBE ASSEMBLY, LH
			X	D4168-044	350 SKIDTUBE ASSEMBLY, RH
1	1	1	1	D2739	WEB
8	8	8	8	D2743	SPACER
1	1	1	1	D2744	CAP
8	8	8	8	D2745	BUSHING
1		1		D3488-041	BLADE FITTING, LH
	1		1	D3488-042	BLADE FITTING, RH
4	4	4	4	D3490-1	SPACER
4	4			D3490-3	SPACER
		4	4	D3490-5	SPACER
8	8	8	8	D3492-041	PLUG ASSEMBLY
8	8			D3492-043	PLUG ASSEMBLY
		8	8	D3492-045	PLUG ASSEMBLY
8	8	8	8	D3631-1	WASHER
7	7	7	7	D3873-1	BUSHING
1	1	1	1	D4154-041	WEARPLATE ASSEMBLY
1				D4168-1	SKIDTUBE WELDMENT, LH
	1			D4168-2	SKIDTUBE WELDMENT, RH
		1		D4168-3	SKIDTUBE WELDMENT, LH
			1	D4168-4	SKIDTUBE WELDMENT, RH
4	4	4	4	D4170-1	SPACER
1	1	1	1	D4171-1	BUSHING
4	4	4	4	ALS4-1032-225	INSERT
4	4	4	4	AN3C6A	BOLT
1	1	1	1	AN3C34A	BOLT
4	4	4	4	AN3C36A	BOLT
4	4	4	4	AN8C44A	BOLT
1	1	1	1	AN8C35A	BOLT
9	9	9	9	AN960C10	WASHER (OR NAS1149CO363R)
4	4	4	4	AN960C10L	WASHER (OR NAS1149CO332R)
1	1	1	1	AN960C816L	WASHER (OR NAS1149CO832R)
5	5	5	5	MS21043-3	NUT
4	4	4	4	MS21043-6	NUT
1	1	1	1	MS21083C8	NUT
4	4	4	4	NAS1515H3L	WASHER

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT

WITHOUT NOTICE
WORK ORDER
NO. 85146 MLJ

12/06/04

GENERAL NOTES:

- MATERIAL: MAKE D4168-1/-2/-3/-4 FROM D2600-3 EXTRUSION (INITIAL LENGTH = 120.0).
- FINISH:
CHEMICAL CONVERSION COAT PER DART QSI 005 4.1 PRIOR TO INSTALLING D2739 WEB.
POWDER COAT WHITE (REF. 4.3.5.1) PER DART QSI 005 4.3
BLACK ANTI-SKID PAINT AS INDICATED TO 1.0 ABOVE SKIDTUBE CENTER-LINE PER DART 005 4.4 (OPTIONAL).
- TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- UNITS: INCHES UNLESS OTHERWISE NOTED
- BREAK SHARP EDGES: N/A
- IDENTIFICATION: N/A
- WEIGHT: D4168-041/-042/-043/-044 = 32.3 LBS
- WELD PER DART QSI 004
- FINAL CONFIGURATION SHOULD HAVE THE FOLLOWING MINIMUM MECHANICAL PROPERTIES:
MINIMUM YIELD TENSILE STRENGTH = 35 KSI
MINIMUM ULTIMATE TENSILE STRENGTH = 38 KSI
- COAT ALL EXPOSED FASTENERS WITH LPS LABORATORIES "LPS PROCYON" AFTER FINAL ASSEMBLY, CLEAN EXCESS OFF
POWDER COATING WITH MEK DEGREASER
- SPACER AND PLUG INSTALLED SAME AS SECTION AJ-AJ EXCEPT HORIZONTAL
- SPACER AND PLUG INSTALLED SAME AS SECTION AP-AP EXCEPT HORIZONTAL

RELEASED
2010-09-15

A		NEW ISSUE		SC	10.08.09
REV		DESCRIPTION		BY	DATE
DESIGN	SC	DART AEROSPACE USA, INC.			
DRAWN	SC	PORT HADLOCK, WA			
CHECKED		DRAWING NO.		REV. A	
MFG. APPR.		D4168		SHEET 1 OF 11	
APPROVED		TITLE		SCALE	
DE APPR.		350 SKIDTUBE ASSEMBLY		NTS	
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DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

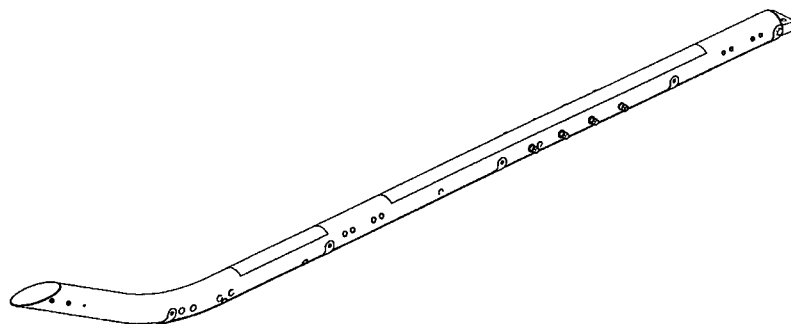
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Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

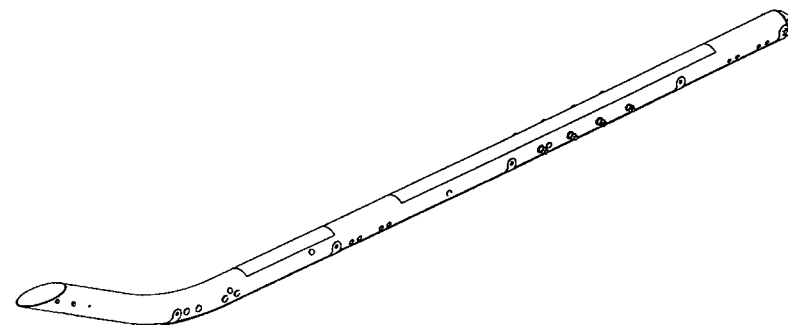
NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

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25146



D4168-041 350 SKIDTUBE ASSEMBLY, LH



D4168-042 350 SKIDTUBE ASSEMBLY, RH

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JW

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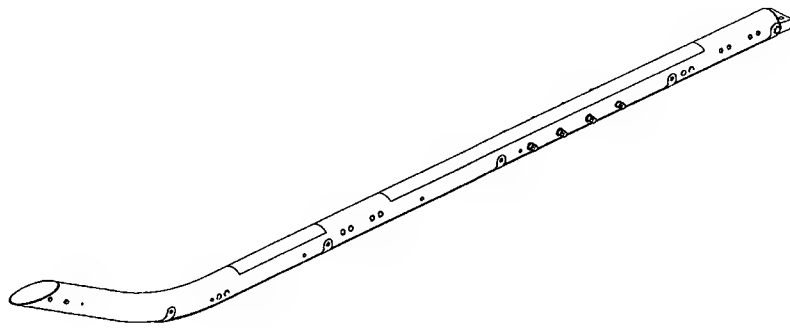
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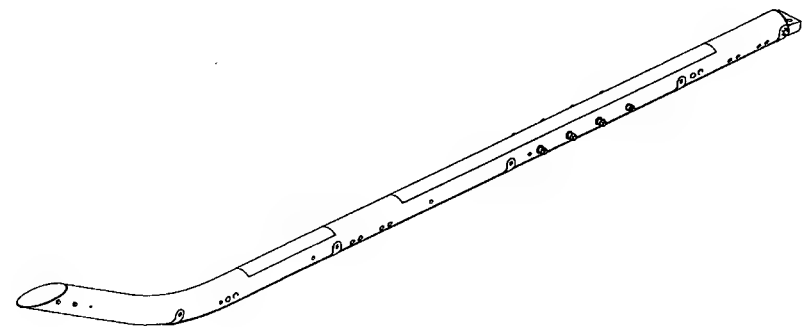
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

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05146



D4168-043 350 SKIDTUBE ASSEMBLY, LH



D4168-044 350 SKIDTUBE ASSEMBLY, RH

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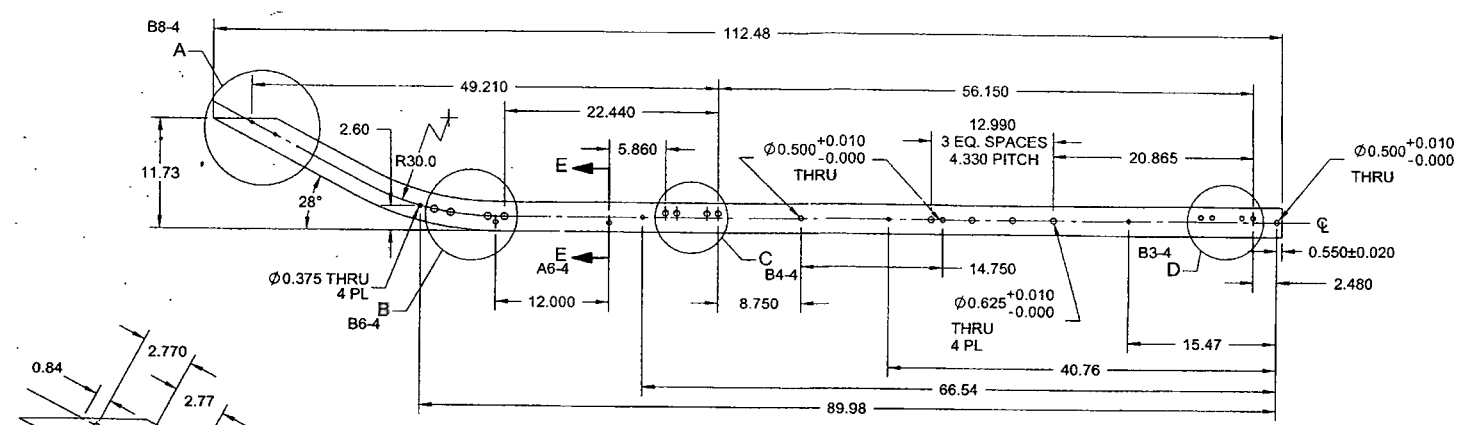
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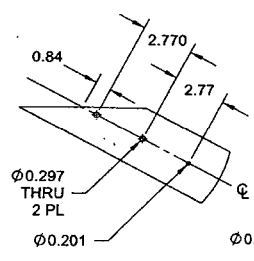
NOTE: Date & initial all entries

8 7 6 5 4 3 2 1

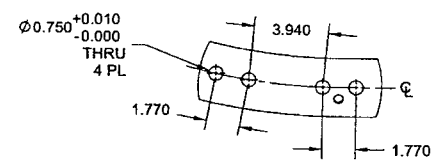
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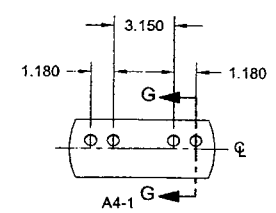
D4168-1 LH SKIDTUBE



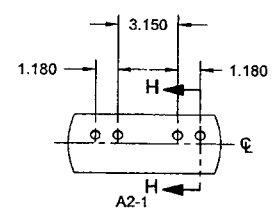
DETAIL A
SCALE 2X



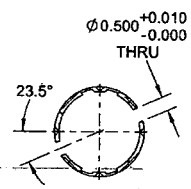
DETAIL B
SCALE 2X



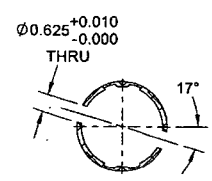
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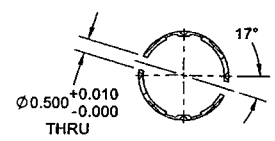
DETAIL D
SCALE 2X



SECTION E-E
SCALE 3X, 2 PL



SECTION G-G
SCALE 3X, 4 PL



SECTION H-H
SCALE 3X, 4 PL

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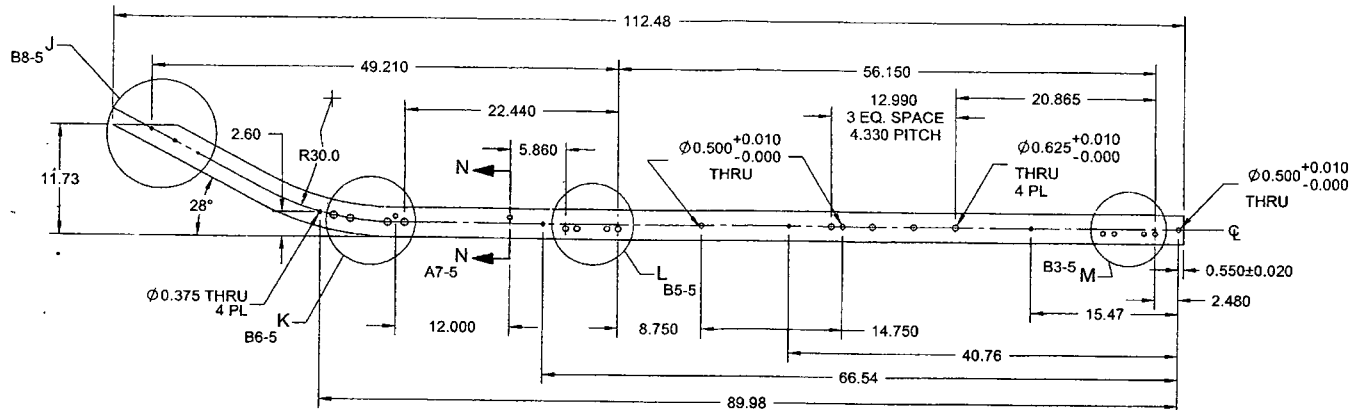
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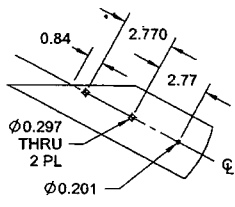
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

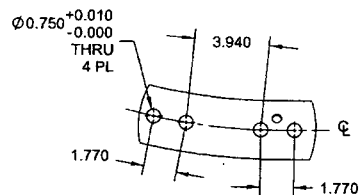
NOTE: Date & initial all entries



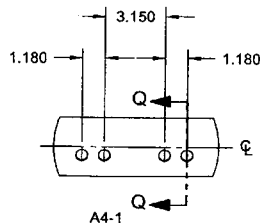
D4168-2 RH SKIDTUBE



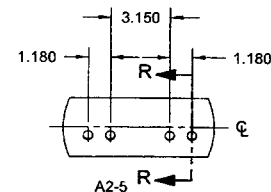
DETAIL J
SCALE 2X
D8-5



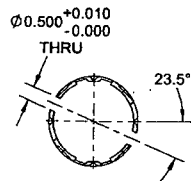
DETAIL K
SCALE 2X
C7-5



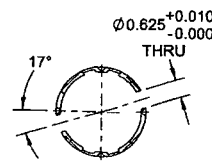
DETAIL L
SCALE 2X
D5-5



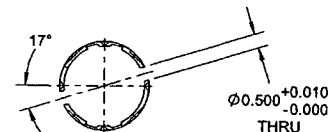
DETAIL M
SCALE 2X
C3-5



SECTION N-N
SCALE 3X, 2 PL
C6-5



SECTION Q-Q
SCALE 3X, 4 PL
B5-5



SECTION R-R
SCALE 3X, 4 PL
B3-5

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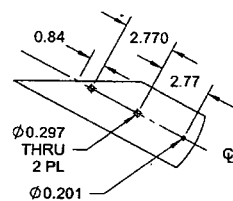
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DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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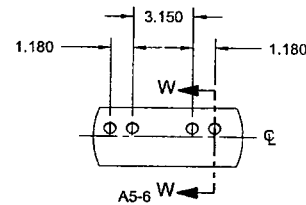
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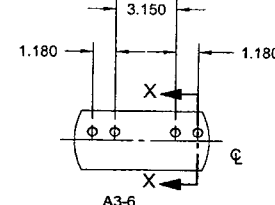
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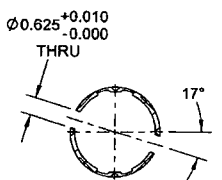
DETAIL S
SCALE 2X



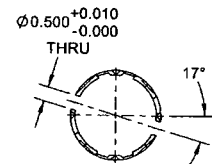
DETAIL T
SCALE 2X



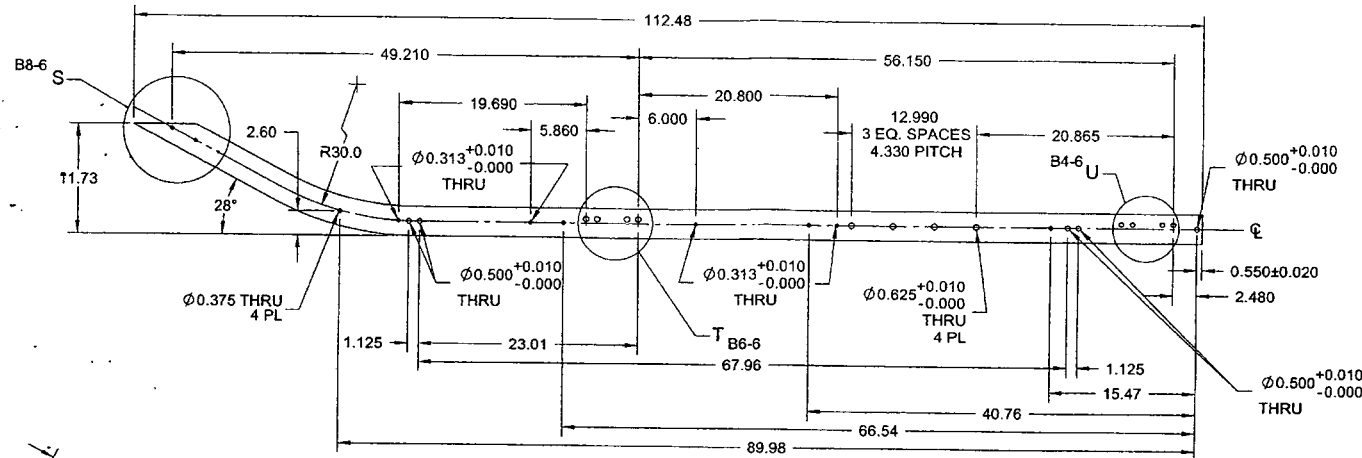
DETAIL U
SCALE 2X



SECTION W-W
SCALE 3X, 4 PL



SECTION X-X
SCALE 3X, 4 PL



D4168-3 LH SKIDTUBE

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Dart Aerospace Ltd

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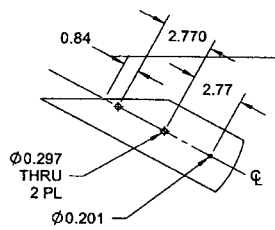
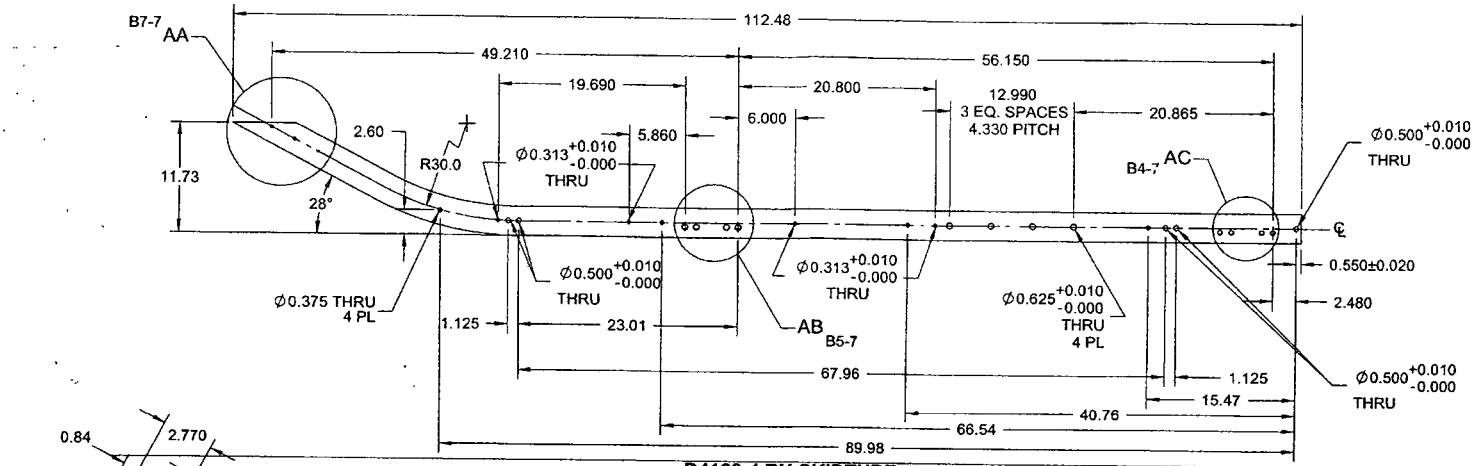
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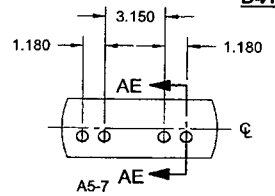
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

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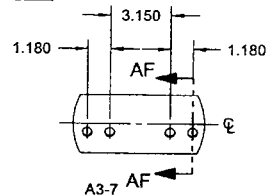
85146



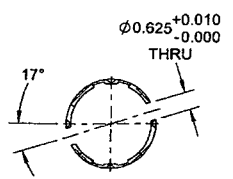
DETAIL AA
D7-7
SCALE 2X



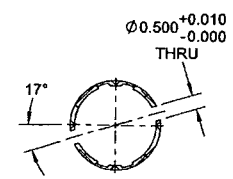
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C4-7
SCALE 2X



DETAIL AC
D3-7
SCALE 2X



SECTION AE-AE
B6-7
SCALE 3X, 4 PL



SECTION AF-AF
B4-7
SCALE 3X, 4 PL

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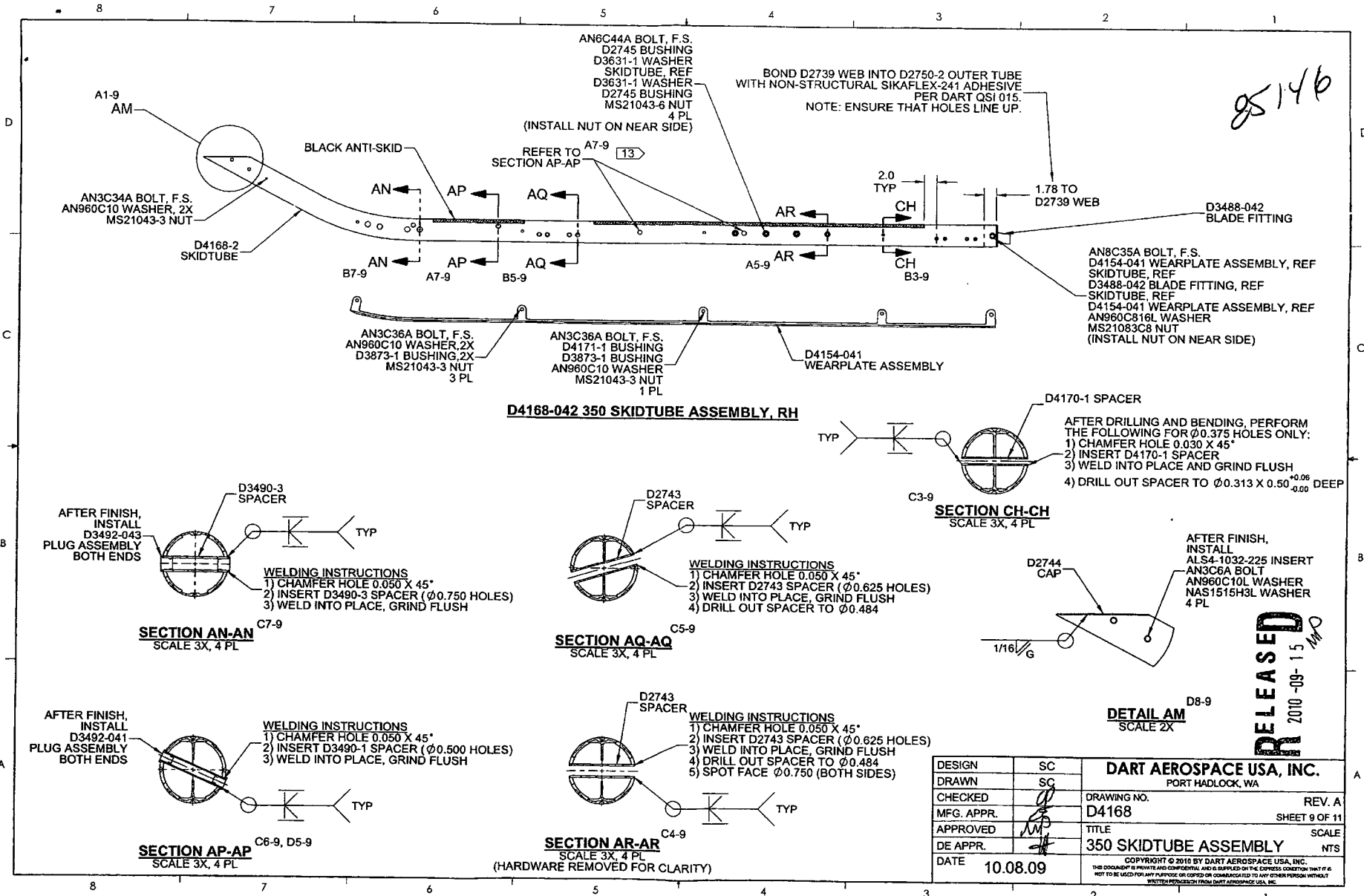
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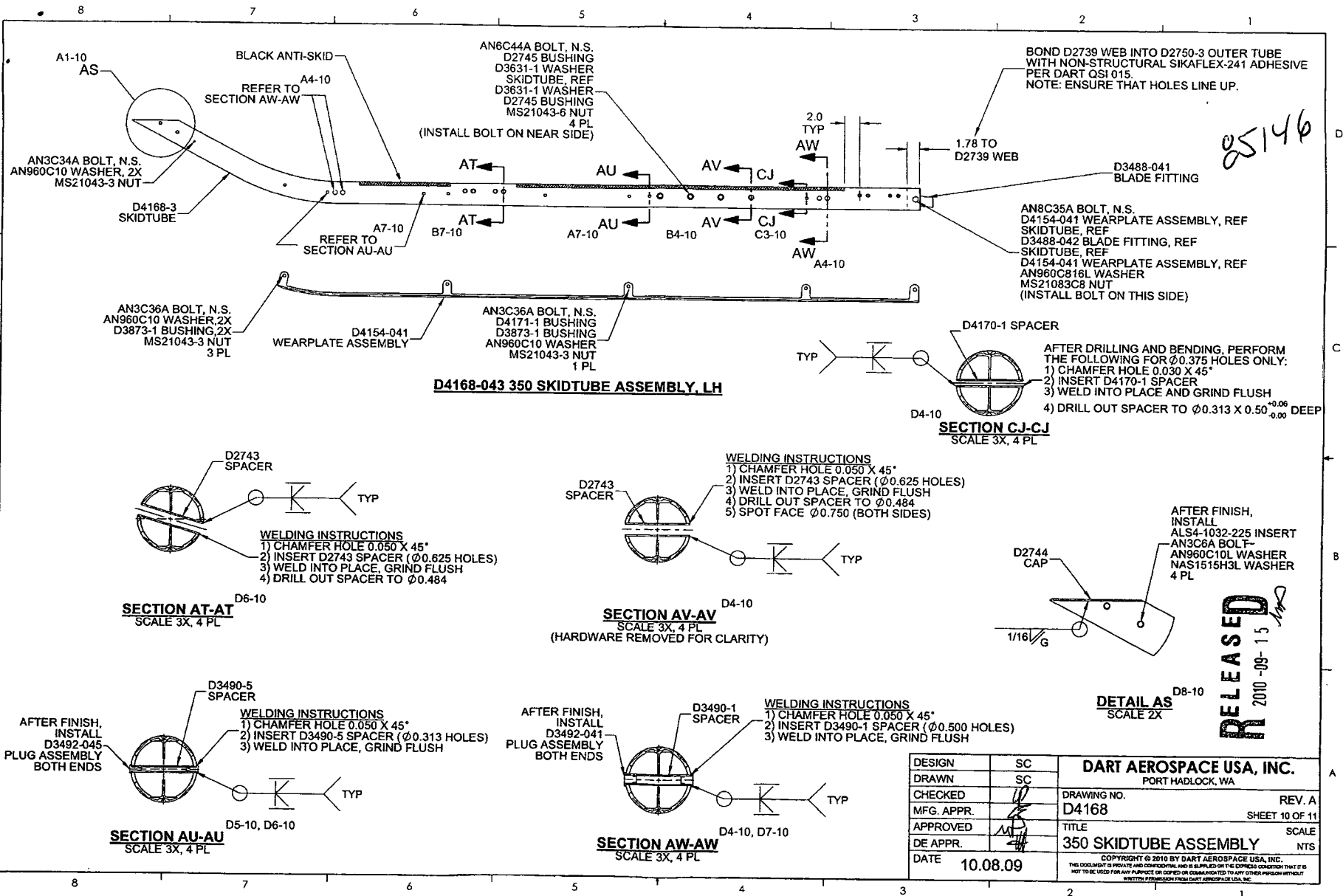
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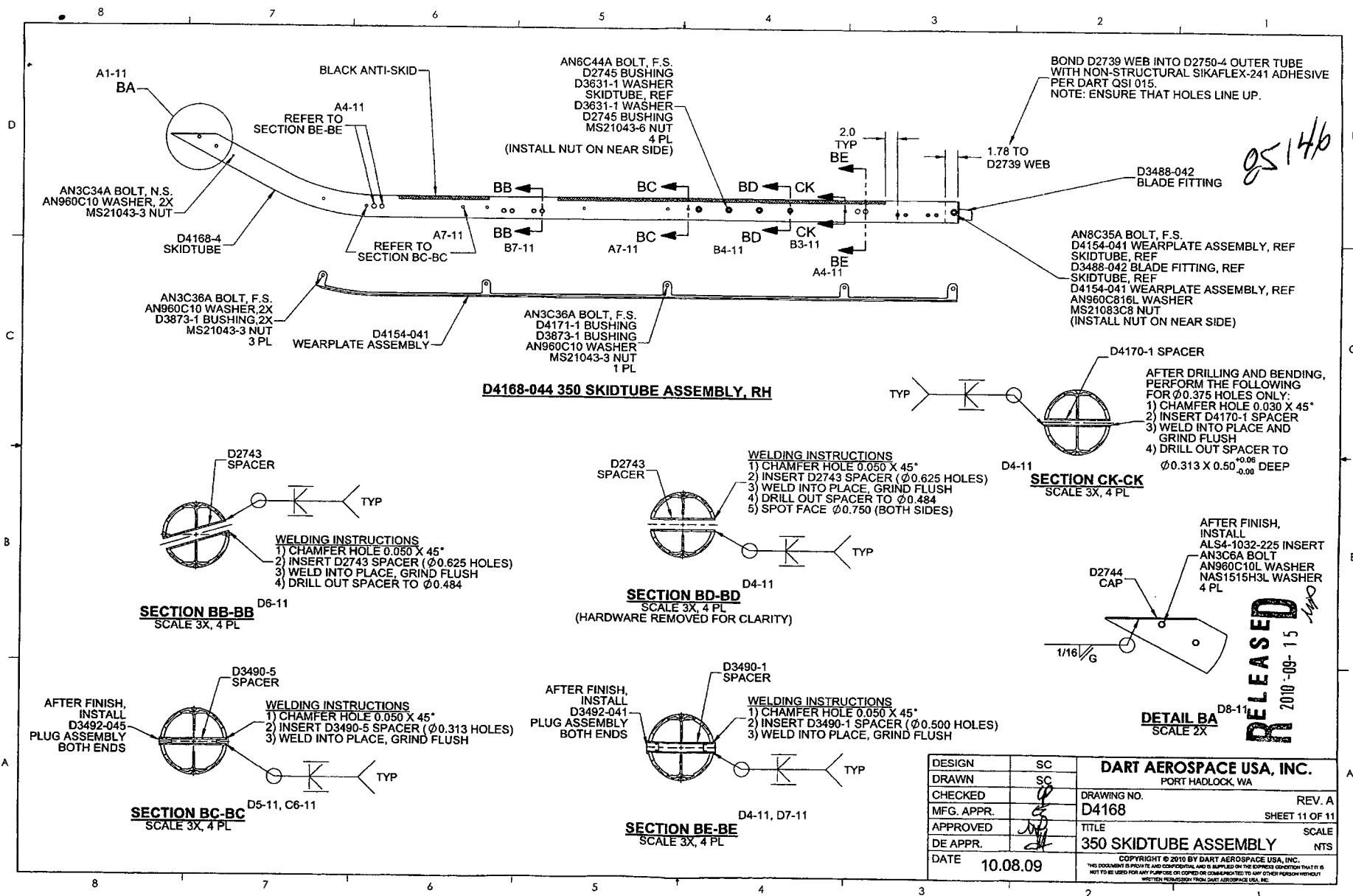
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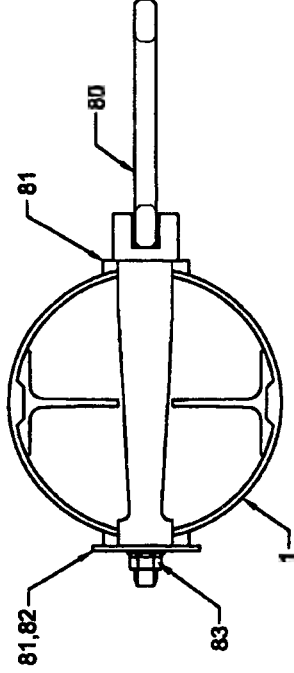
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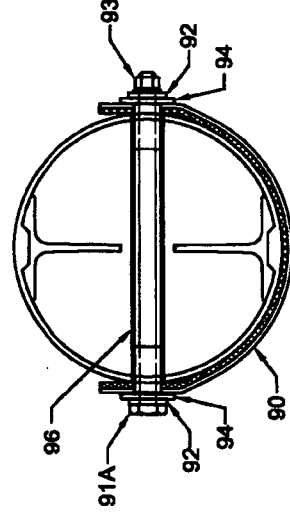
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SECTION R-R
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D350-636-109 TOW RING KIT

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ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
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12/07/24



SECTION S-S
D350-636-015/-016/-017/-018/-215/-216/-217/-218
SKIDTUBES, 3 PL

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Revision: **I**
Date: 10.10.25

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

DQA: _____ Date: _____

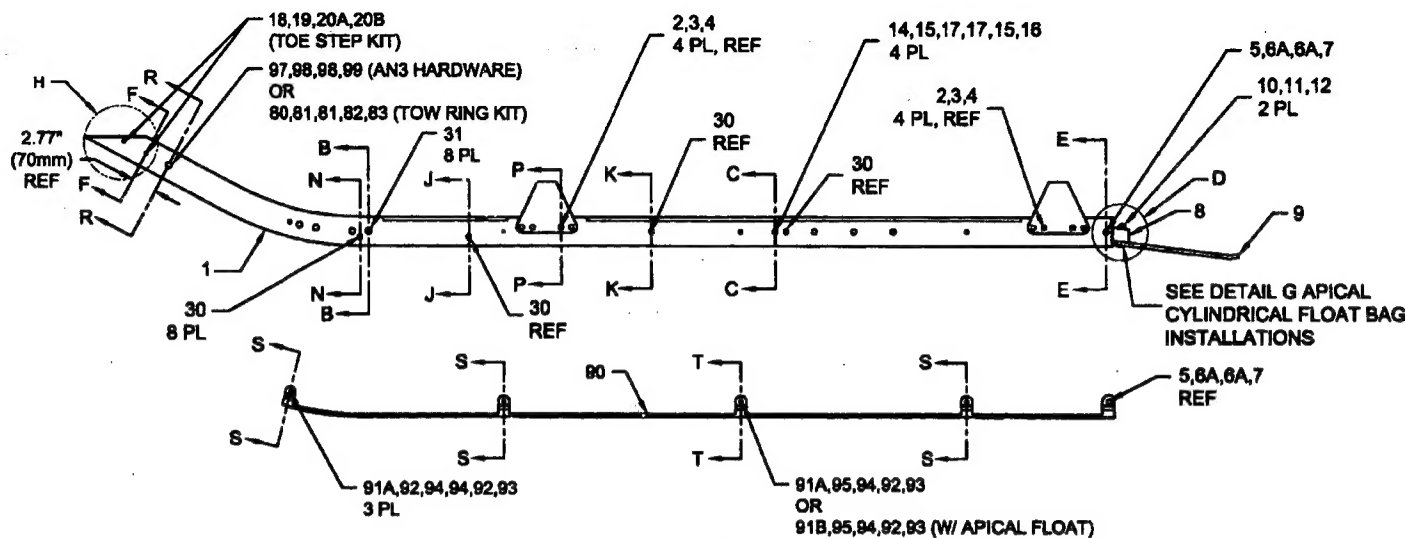
QA Closed: _____ Date: _____

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>	AGAINST DEPARTMENT/PROCESS <table style="width: 100%;"> <tr> <td>Skid-tube <input type="checkbox"/></td> <td>Crosstube <input type="checkbox"/></td> <td>Water Jet <input type="checkbox"/></td> <td>Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table>	Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>	Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coord. <input type="checkbox"/>	Quality <input type="checkbox"/>	Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>	Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>	
Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>															
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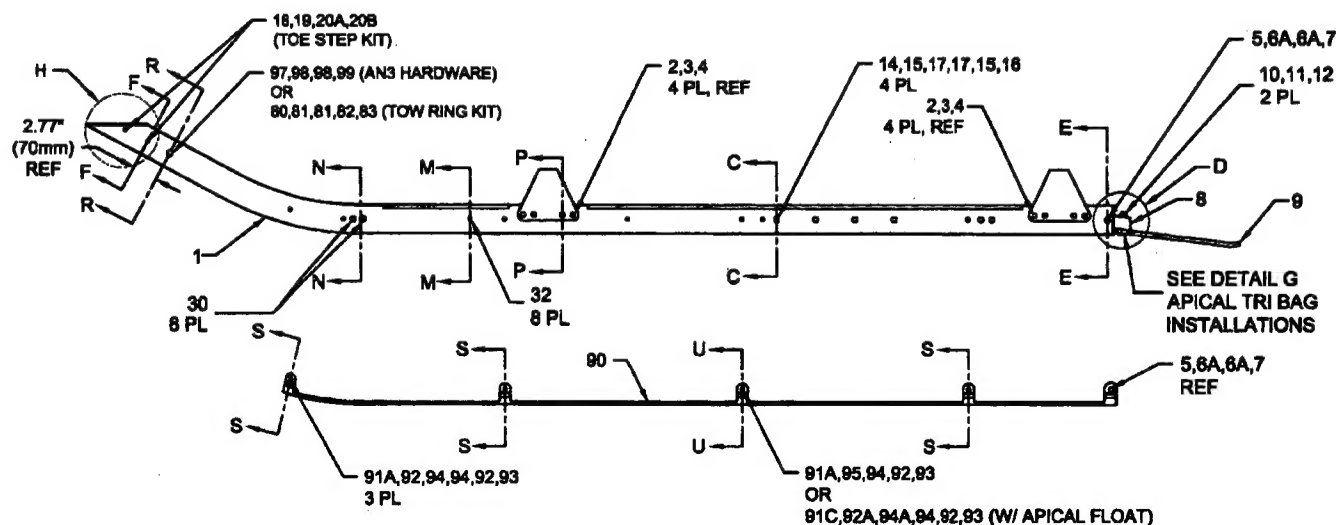
Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Doc/Data <input type="checkbox"/>									
Equip/Tooling <input type="checkbox"/>									
Operator <input type="checkbox"/>									
Material <input type="checkbox"/>									
Setup <input type="checkbox"/>									
Other <input type="checkbox"/>									
Process <input type="checkbox"/>									
Supplier <input type="checkbox"/>									
Training <input type="checkbox"/>									
Unapproved <input type="checkbox"/>									

FAULT CATEGORY

Landing Gear <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube	General <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio	<input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions	<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge	<input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other
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D350-636-015/-016/-215/-216
(Aerazur/Apical Cylindrical)



D350-636-017/-018/-217/-218
(Aircruiser/Apical Tri-bag)

Figure 3: D350-636-015/-016/-017/-018/-215/-216/-217/-218 SKIDTUBE ASSEMBLY

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NO. 298

AWS D17.1.2001
QUALIFICATION TEST RECORD

Name: Barclay Elliott
Job #: 87012
Part #: A350-636-014
Description: Skid tube
Welding Process: Tig ☒ Mig ☐
Base material: Alum. in.
Current: AC ☒ DC ☐

TEST REQUIREMENTS AND RESULTS

Visual:	pass <input checked="" type="checkbox"/>	fail <input type="checkbox"/>
Incomplete Penetration:	pass <input checked="" type="checkbox"/>	fail <input type="checkbox"/>
Incomplete Fusion:	pass <input checked="" type="checkbox"/>	fail <input type="checkbox"/>
Cracks:	pass <input checked="" type="checkbox"/>	fail <input type="checkbox"/>
Overlap (cold lap)	pass <input checked="" type="checkbox"/>	fail <input type="checkbox"/>
Undercut:	pass <input checked="" type="checkbox"/>	fail <input type="checkbox"/>
Pin holes:	pass <input checked="" type="checkbox"/>	fail <input type="checkbox"/>
Porosity (surface):	pass <input checked="" type="checkbox"/>	fail <input type="checkbox"/>
Coloration:	pass <input checked="" type="checkbox"/>	fail <input type="checkbox"/>
Burn through:	pass <input checked="" type="checkbox"/>	fail <input type="checkbox"/>

Qualifier David Reed Date of Test Coupon 12.07.23

Welder Barclay Elliott Date of Test Coupon 12-07-23

The above named individual is qualified in accordance with AWS D17.1.2001 to weld